S/121/60/000/008/013/014/XX
D040/D113

AUTHOR: Paramonov, V.F.

TITLE: The running-in and power testing of machine tools without metal cutting

PERIODICAL: Stanki i instrument, no. 8, 1960, 14-15

TEXT: Detailed illustrated description is given of a running-in and test device for lathes (Fig.3), which can also be applied to milling and drilling machines. This device eliminates the considerable metal losses in the formation of chips during ordinary standard tests by roughly cutting the blanks with the maximum cutting force. The device, which is shown diagrammatically (Fig.1), consists of a long helical gear (z_1) installed on the machine, and a mating helical gear (z_2) which is coupled with a loading and braking unit fixed on the saddle. The length of the z_1 gear is chosen according to the work length and the length of the guide screw or rack to be run in. The saddle is loaded with three components of the cutting force: circumferential P_z (Fig.2), radial P_y, which is proportional to P_z and depends on the pressure angle and the vertical position of the axes, and axial P_x, which is

Card 1/6

proportional to the circumferential force and depends on the helix angle. The required $\frac{P_y}{P_z}$ ratio at the standard pressure angle is obtained by placing the axis of the z_2 gear above that of the z_1 gear. The height difference, x, is determined by the ω angle from the O_1O_2C triangle (Fig.2), using the following formula:

$$x = \frac{(d_{no_1} + d_{no_2})\sin\omega}{2}.$$

Rotation is transmitted from the z_2 gear to the loading and braking device. Braking can be accomplished by a mechanical friction brake, a magnetic powder clutch, or by loading with the aid of an electric generator or an air compressor. The application of electric generators of the ГС (GS) type proves most convenient for braking purposes; using these generators, the load capacity can easily be adjusted and the current in the stator shunt winding altered. The GS type generators operate at 3600-9000 rpm. Therefore, a multiplier (reducer) of three gear couples (z_4-z_5; z_6-z_7; z_8-z_9) is used

S/121/60/000/008/013/014/XX
D040/D113

The running-in and power testing ....

between the z_2 gear and the generator. Any reducer design including planetary may be used. The loading unit on the saddle replaces the tool holder, or it can be held in the tool holder. The z_8 gear is made of plastic in order to reduce noise. The total weight of the device together with a ГСР-3000 (GSR-3000) generator is 25 kg. A photograph showing the device on a "1A616" screwcutting lathe is included. There are 4 figures.

Card 3/6

PARAMONOV, Vladimir Fedorovich, kand. tekhn. nauk; PETROPOL'SKAYA, N.Ye., red.; DURASOVA, V.M., tekhn. red.

[New dynamometric equipment and the measurement of cutting forces]Novaia dinamometricheskaia apparatura i izmerenie sil rezaniia. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo, 1962. 48 p. (MIRA 16:3)
(Dynamometer) (Metal cutting--Measurement)

PARAMONOV, V.F.

Running-in and efficiency tests of machine tools without cutting metals. Stan.i instr. 31 no.8:14-15 Ag '60. (MIRA 13:8)

(Machine tools—Testing)

PARAMONOV, V.P.

Graduation of three-component dynamometers. Izm.tekh. no.3:15-16 Mr '60. (MIRA 13:6)

(Dynamometer)

PARAMONOV, V.G.

ZAYONCHKOVSKIY, A.D.; YABKO, Ya.M.; MIKHAYLOV, N.A.; FEOKTISTOV, V.K.; SHMERLING, B.M.; BERNSHTEYN, M.Kh.; GUS'KOV, F.G.; PARAMONOV, V.G.; GLUZMAN, G.M.; GRIGORIADI, M.T.

Polyamide treatment of imitation kidskin and flesh layer splits. Leg.prom. 16 no.10:22-26 O '56. (MIRA 10:12)
(Hides and skins) (Amides)

KLORIK'YAN, S.Kh.,inzh.; PARAMONOV, V.I.,inzh.

In the Technical Council of the State Experimental Institute of Design and Construction for the Coal Machinery Industry. Ugol' 35 no.10:65-66 O'60. (MIRA 13:10)

1. Giprouglemash.
(Coal mining machinery) (Mine timbering)

KLORIK'YAN, S.Kh., inzh.; PARAMONOV, V.I., inzh.

Results of the testing of mobile mechanized supports for stopes. (MIRA 12:12)
Ugol' 34 no.8:27-32 Ag '59.

1. Giprouglemash. (Mine timbering)

IVANOV, K., inzhener; PARAMONOV, V., inzhener; SHIL'BERG, I., inzhener.

Metal props for thin seams. Mast.ugl. 5 no.7:23-24 Jl '56.
(Mine timbering) (MIRA 9:9)

PARAMONOV, V. F. (Aspirant)

"An Investigation of the Cutting Forces in the High-Speed Machining of Carbon Steel with a Recently Developed Dynamometrical Apparatus." Cand Tech Sci, Moscow Aviation Technological Inst, 24 Dec 54. (VM, 14 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)

SO: SUM No. 556, 24 Jun 55

PARAMONOV, V. F.

"Investigation of the Cutting Forces in High-Speed Turning of Carbon Steels on the Basis of Newly Developed Dynamometric Apparatus." Cand Tech Sci, Kuybyshev Aviation Inst, Kuybyshev, 1954. (RZhMekh, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

PARAMONOV, Vladimir Fedorovich, kand. tekhn. nauk; SOLOMONOV, Aleksandr Ivanovich, shlifovshchik-novator; MIKHEYEV, N.I., red.; DURASOVA, V.M., tekhn. red.

[Machining profile parts on surface-grinding machines] Obrabotka profil'nykh detalei na ploskoshlifoval'nykh stankakh. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo, 1963. 73 p. (MIRA 16:9)

1. Srednevolzhskiy stankostroitel'nyy zavod (for Solomonov, Paramonov).

(Grinding and polishing)

PARAMONOV, V.I., kandidat tekhnicheskikh nauk.

Interrelations of cutting parameters. Vest.mash. 36 no.7:45-49 Jl '56. (Metal cutting) (MLRA 9:9)

PARAMONOV, V.F.; SAL'NIKOV, P.M.

Testing gearboxes and feed mechanisms under loading. Stan. i instr. 36 no.6:26-27 Je '65. (MIRA 18:8)

PARAMONOV V.F

1888. Cutting Force in Work With High Feed. [illegible] (Russian.) V. F. [illegible] Stanki i Instrument, v. [illegible], no. 10, Oct. [illegible]

Gives analysis of the cutting process and method of determination of composite factors. Discusses the elements of wear. Graphs.

PARAMONOV,V.F.

Cutting forces in large-feed machining. Stan. i instr.26 no.10: 24-26 O'55. (MIRA 9:1)

(Metal cutting)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239210012-0"

18.3200

77604
SOV/133-60-2-4/25

AUTHOR: Kotrovskiy, M. M., Paramonov, V. G. (Engineers)

TITLE: Effect of Port Size on Productivity of Open-hearth Furnaces Output

PERIODICAL: Stal', 1960, Nr 2, pp 111-117 (USSR)

ABSTRACT: The investigation of performance of the 370-ton open-hearth furnace ports of various designs, when feeding oxygen into the flame (with air enrichment up to 24%) was carried out on two groups of furnaces "A" and "B". Group "A": charge 370 ton, volume of gas checkers 116 m^3, volume of air checkers 165 m^3. Group "B": Charge 370 ton, volume of gas checkers 163 m^3, volume of air checkers 224 m^3, the height of smoke-stack 100 m. To determine the most rational dimensions of the port the following points were investigated: (1) The area of gas outlet into the flue; (2) height of gas port over threshold of the door; (3) angle

Card 1/7

Effect of Port Size on Productivity of Open-hearth Furnaces Output

77604
SOV/133-60-2-4/25

of inclination of the roof (in the air duct); (4) angle of inclination of the gas port bottom in the flue; (5) the angle of incidence of air flow and gas flow; (6) angle of inclination of flue roof along the generatrix; (7) distance to the point of contact of gas flow with the bath; (8) height of air gap between the roof of ports and the flue; (9) length of "fore-chamber"; (10) ratio of cross sectional areas of flame and gas door; (11) ratio of flame door height to its average width; (12) height of "air dam" over charge door's bridge. As a result of investigation the most rational dimensions are given in Table 1. The established correlations are only effective under analogous working conditions. At present the ports of 370-ton furnaces are designed with consideration for the established optimum parameters for both groups "A" and "B". The design of ports is shown in Fig. 6. Research continues to determine the effects of individual parameters of ports on the productivity of open-hearth furnaces.

Card 2/7

Effect of Port Size on Productivity of Open-hearth Furnaces Output

77604
SOV/133-60-2-4/25

ports parameters	meaning of parameters: Giprostal type	used by the plant	rational for furnaces, group A	rational for furnaces, group B	increase of productivity (%) by use of rational parameters on the furnaces, group A	group B
1	0,42	0,43	0,42	0,45	5,5	5,2
2	0,7—0,8	0,71	0,7	0,7	2,0	3,2
3	800	1100	1000	950	3,5	0,0
4	30°	33°	34°	34°	3,5	3,2
5	6°	12°	10°	9°30'	2,6	1,2
6	11°30'	14°	14°30'	14°	0,5	0,0
7	24°	21°	24°	24°30'	1,0	3,2
8	425	450	500	550	1,5	2,5
9	600	700	500	500	2,5	2,8
10 a)	6,8	6,64	7,3	7,9	—	—
b)	1800	1700	1850	2000	—	—
c)	4460	4600	4150	4600	—	—
d)	3700	3800	3870	4000	—	—
11	0,435	0,405	0,45	0,47	2,0	1,2
12	16,2	15,45	17,5	17,5	2,0	3,7
13	1450	1700	1625	1430—1450	0,0	4,2
14	4,80	5,13	4,50	4,60	4,0	2,2

Card 3/7

Effect of Port Size on Productivity of Open-hearth Furnaces Output

77604
SOV/133-60-2-4/25

Table 1. The effect of main rational parameters of "Venturi-type" ports on productivity of 370-ton open-hearth furnaces, and a comparison of these parameters with typical parameters (Giprostal') and with those used by the plant.

(1) Area of gas door, m^2 (2) ratio of gas door height to its width (3) height of gas hearth bottom over the bridge (hb) (4) angle of inclination of rhombic roof of port (φ) (5) angle of inclination of gas hearth bottom and flue (γ) (6) angle of inclination of flue roof along generatrix (α) (7) angle of incidence of air flow and gas flow (ψ) (8) height of air gap between the roof of ports and the flue, mm (9) length of "forechamber", mm (LF) (10) flame

Card 4/7

Effect of Port Size on Productivity of Open-hearth Furnaces Output

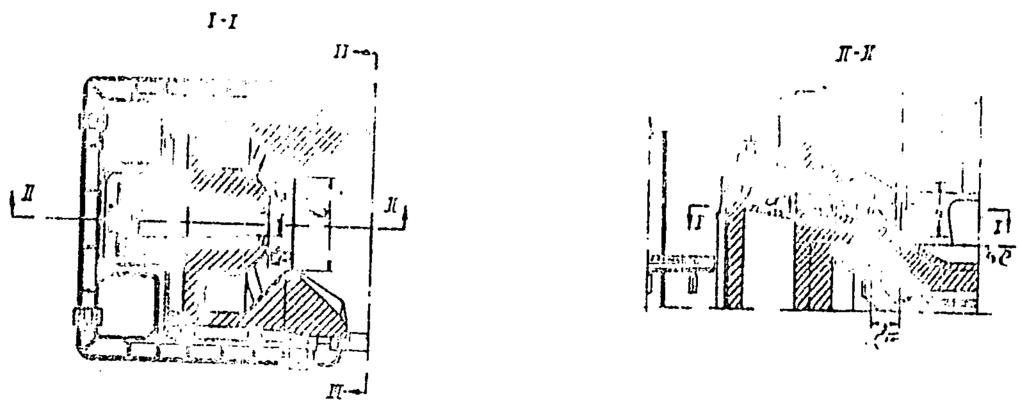
77604
SOV/133-60-2-4/25

door (a) area, m (b) height, mm (H) (c) upper width, mm (K) (d) lower width, mm (U) (11) ratio of flame door height to its average width (12) ratio of areas of flame and gas doors (13) height of "air dam" over charge door bridge, mm (14) distance from the point of gas flow contact with the bath to flue, m. There are 1 table; and 6 figures.

Card 5/7

Effect of Fort Size on Productivity of Open-hearth Furnaces Output

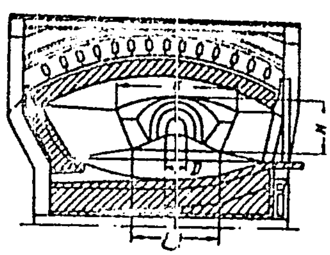
77604
SOV/133-60-2-4/25



Card 6/7

Fig. 6

Fig. 6. Design of 370-ton open-hearth furnace port with rational parameters. (D) Width of gas door. For other designations see Table 1.



KOTROVSKIY, M.M., inzh.; PARAMONOV, V.G., inzh.

Effect of port dimensions on the performance of open-hearth furnaces. Stal' 20 no.2:111-117 F '60. (MIRA 13:5)
(Open-hearth furnaces)

PARAMONOV, V.G.

KOP'YEV, A.A. [deceased]; ZAYONCHKOVSKIY, A.D.; YABKO, Ya.M.; PARINI, V.P.; PARAMONOV, V.G.; GLUZMAN, G.M.; GRIGORIADI, M.G.

Increasing water repellency in leather by means of a velan-type compound. Leg.prom. 17 no.7:23-25 Jl '57. (MIRA 10:9)
(Leather industry)

PARAMONOV, V.I

PARAMONOV, V.I., inzh.; KOLBASIN, G.M., inzh.; VAVILOV, V.V., inzh.

Unit of equipment with the M-9 support. Mekh.trud.rab. 11 no.8:17-21 Ag '57. (MIRA 10:11)
(Coal mines and mining--Equipment and supplies)

PARAMONOV, V. I.

ALEKSANDROV, B.F., inzh.; BALYKOV, V.M., inzh.; BARANOVSKIY, F.I., inzh.; BOGUTSKIY, N.V., inzh.; BUN'KO, V.A., kand.tekhn.nauk, dotsent; VAVILOV, V.V., inzh.; VOLOTKOVSKIY, S.A., prof., doktor tekhn.nauk; GRIGOR'YEV, L.Ya., inzh.; GRIDIN, A.D., inzh.; ZARMAN, L.N., inzh.; KOVALEV, P.F., kand.tekhn.nauk; KUZNETSOV, B.A., kand.tekhn.nauk, dotsent; KUSNITSYN, G.I., inzh.; LATYSHEV, A.F., inzh.; LEYBOV, R.M., doktor tekhn.nauk, prof.; LEYTES, Z.M., inzh.; LISITSYN, A.A., inzh.; LOKHANIN, K.A., inzh.; LYUBIMOV, B.N., inzh.; MASHKEVICH, K.S., inzh.; MALKHAS'YAN, R.V.; MILOSERDIN, M.M., inzh.; MITNIK, V.B., kand.tekhn.nauk; MIKHEYEV, Yu.A., inzh.; PARAMONOV, V.I., inzh.; ROMANOVSKIY, Yu.G., inzh.; RUBINOVICH, Ye.Ye., inzh.; SAMOYLYUK, N.D., kand.tekhn.nauk; SMEKHOV, V.K., inzh.; SMOLDYREV, A.Ye., kand.tekhn.nauk; SNAGIN, V.T., inzh.; SNAGOVSKIY, Ye.S., kand.tekhn.nauk; FEYGIN, L.M., inzh.; FRENKEL', B.B., inzh.; FURMAN, A.A., inzh.; KHORIN, V.N., dotsent, kand.tekhn.nauk; CHETVEROV, B.M., inzh.; CHUGUNIKHIN, S.I., inzh.; SHELKOVNIKOV, V.N., inzh.; SHIRYAYEV, B.M., inzh.; SHISHKIN, N.F., kand.tekhn.nauk; SHPIL'BERG, I.L., inzh.; SHORIN, V.G., dotsent, kand.tekhn.nauk; SHTOKMAN, I.G., doktor tekhn.nauk; SHURIS, N.A., inzh.; TERPIGOREV, A.M., glavnyy red.; TOPCHIYEV, A.V., otv.red.toma; LIVSHITS, I.I., zamestitel' otv.red.; ABRAMOV, V.I., red.; LADYGIN, A.M., red.; MOROZOV, R.N., red.; OZERNOY, M.I., red.; SPIVAKOVSKIY, A.O., red.; FAYBISOVICH, I.L., red.; ARKHANGEL'SKIY, A.S., inzh., red.;

(Continued on next card)

ALEKSANDROV, B.F.---(continued) Card 2.

BELYAYEV, V.S. inzh., red.; BUKHANOVA, L.I., inzh., red.; VLASOV, V.M., inzh., red.; GLADILIN, L.V., prof., doktor tekhn.nauk, red.; GREBTSOV, N.V., inzh., red.; GRECHISHKIN, F.G., inzh., red.; GONCHAREVICH, I.F., kand.tekhn.nauk, red.; GUDALOV, V.P., kand.tekhn. nauk, red.; IGNATOV, N.N., inzh., red.; LOMAKIN, S.M., dotsent, kand. tekhn.nauk, red.; MARTYNOV, M.V., dotsent, kand.tekhn.nauk, red.; POVOLOTSKIY, I.A., inzh., red.; SVETLICHNYY, P.L., inzh., red.;SAL'TSEVICH, L.A., kand.tekhn.nauk, red.; SPERANTOV, A.V., kand.tekhn. nauk, red.; SHETLER, G.A., inzh., red.; ZABARBARCHUK, F.I., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.; KONDRAT'YEVA, M.A., tekhn.red.

[Mining; an encyclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red.A.M.Terpigorev. Chleny glav.redaktsii A.I. Baranov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.7. [Mining machinery] Gornye mashiny. Redkol.toma A.V.Topchiev i dr. 1959. 638 p. (Mining machinery) (MIRA 13:1)

PARAMONOV, V.I.; YEGOROV, N.K.

[redacted]

Conference on metallic supports. Ugol' 31 no.11:43 N '56. (MLRA 10:2)

(Mine timbering)

PARAMONOV, V.I.

2

1281. EXPERIENCE IN INTRODUCTION OF MPK MECHANIZED MOBILE SUPPORT. Lisitsyn, A.A. and Paramonov, V.I. (Mekhan. Trud. tyazhel. Rabot (Mech. Arduous Wk, Moscow), Aug. 1954, 11-15). Illustrated description and particulars of performance in several mines are given for the type M7E of the MPK mobile support working in mechanized longwalls in conjunction with the M56 support shifter and the KS-1 articulated scraper conveyor.

Mech Engg

SEGAL, V.S., inzh.; PARAMONOV, V.I., inzh.

Unit for heating winter shelters. Avt.dor. 26 no.10:26 O '63.
(MIRA 16:11)

PARAMONOV, V.I.

Vibrating device for cleaning mine cars. Ugol' 33 no.9:29-30 S '58. (MIRA 12:1)
(Mine railroads--Cars)
(Coal mines and mining--Equipment and supplies)

LISITSYN, A.A., inzhener; PARAMONOV, V.I., inzhener.

Experience in introducing MPK mechanized moveable mine supports. Mekh. trud. rab. 10 no.8:11-15 Ag '56. (MLRA 9:10)

(Mine timbering)

LISITSYN, A.A., inzhener; PARAMONOV, V.I., inzhener; SHPIL'BERG, I.L., inzhener.

New set of equipment for the complete mechanization of longwall mining operations. Mekh.trud.rab. 8 no.8:5-10 D '54. (MLRA 8:1)
(Mining machinery)

PARAMONOV, V.I., inzhener; KORZHIKOV, M.I., inzhener.

Experience in using OK organpipe post. Mekh.trud.rab. 8 no.3:36-37 Ap-My '54. (MLRA 7:6)
(Mine timbering)

GRIDIN, A.D.; KHLORIK'YAN, S.Kh.; PARAMONOV, V.I.

Conclusions from the experience of using powered support in horizontal seams. Ugol' 40 no.8:48-53 Ag '65. (MIRA 18:8)

1. Gosudarstvennyy proyektno-konstruktorskiy i eksperimental'nyy institut ugol'nogo mashinostroyeniya.

PARAMONOV, V. I.

USSR/Mining - Scaffolds

Card 1/1

Authors : Paramonov, V. I., and Korzhikov, M. I.

Title : Experiment on Application of Walling Scaffolds, Type OK.

Periodical : Mekh. Trud. Rab. Ed. 3, 36 - 37, Apr - May 1954

Abstract : The application and testing of walling scaffolds, type OK-150. According to the author the type OK-150 scaffolds are easy to produce, and result in the saving of metal by 400 to 600%. Advantages over the standard MOS-50U scaffolds are also pointed out. Tables; diagrams; graph; illustration.

Institution : ....

Submitted : ....

B-III-1

ASM-SLA METALLURGICAL

A. G. P

PARAMONOV, V.I.

USSR.

965. NEW COMBINATION OF EQUIPMENT FOR COMPLETE MECHANIZATION IN LONGWALL WORKING. Lisitsyn, A.A., Paramonov, V.I. and Shpil'berg, L.L. (Mekhan. Trud. tyazhel. Rabot (Mech. Arduous Wk), 1954, (8), 5-10; abstr. in Ugol (Coal), Mar. 1955, 48). Mining trials are reported on an arrangement in which supports, roof control and movement of the face conveyor are mechanized in addition to winning.

2

PARAMONOV, V.I., inzhener

Mechanization of coal mining in England. Mekh.trud.rab.9 no.8: 41-45 Ag'55. (MIRA 8:10)

(Great Britain--Mining engineering)

Paramonov, V.I.

USSR.

4940. EXPERIENCE IN USE OF OK ORGAN PIPE SUPPORTS. Paramonov, V.I. and Korzhikov, M.I. (Mekhan. Trud. tyazhel. Rabot (Mech. arduous Wk), Apr. May 1954, 36, 37). An illustrated description is given of cast steel quick thread screw supports which are in use in seven Soviet mines after successful trials. There are four sizes, with height ranges from 375-510 mm to 670-1060 mm and weights from 105 to 170 kg. The supports are designed to give up to 40 mm under a working load of 150 tons.

KLORIKYAN, S.Kh.; GRIDIN, A.D.; PARAMONOV, V.I.

At the Scientific Technical Council of the State Experimental Institute of Design and Construction for the Coal Machinery Industry. Ugol' 39 no.11:66-69 N '64. (MIRA 18:2)

PARAMONOV, V. K.

PARAMONOV, V. K. -- "Investigation of the Influence of Atmospheric Precipitation on the Function of Radio Station Antennas." Min Communications USSR, Moscow Electrical Engineering Institute of Communication, Moscow, 1956. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No 43, October 1956, Moscow

PARAMONOV, V.K.

CARD 1 / 2 PA - 1492

SUBJECT USSR / PHYSICS
AUTHOR PARAMONOV, V.K.
TITLE The Influence exercised by Precipitation on the Electric Properties of the Surfaces of Nets of Wire.
PERIODICAL Radiotechnika, 11, fasc.9, 12-20 (1956)
Issued: 10 / 1956 reviewed: 11 / 1956

This work deals with the problem of the influence exercised by precipitation on the electric properties of a network of line wires with round cross section. It is assumed that wire of this network is covered by a uniform coating of ice, i.e. that the electric line and the coating of ice form coaxial cylinders. In spite of a certain idealization this case is a very near approach to conditions actually existing in practice and therefore of practical interest. The first case to be investigated is that of a plane wave inciding upon the wire net which is covered by a coaxial coating of ice. This wire net is assumed to consist of an infinite number of infinitely long conducting wires arranged at equal distances from one another. On the basis of these conditions a system of equations is derived which contains the unknown quantities Q_m, R_m, S_m and coefficients which are determined by the boundary conditions and do not depend on the ordinal number of the conducting wire. (All conducting wires were numbered in consecutive order from $-\infty$ to $+\infty$). Next, the solution of this system with respect to Q_m is carried out. Computations show that in the case of such wavelengths, wire diameters, and distances between wires as occur in practice, the quantity Q_m suffers a sharp decline if the summation index m (m = ... -2,-1,0,1,2,...) increases. This makes it possible, PARAMONOV, V.K., inzhener.

Protecting radio relay line antennas from the effects of precipitation.
Vest.sviazi 17 no.2:9-10 F '57. (MLRA 10:3)
(Radio—Antennas)

SOV/106-58-5-5/13

AUTHORS: Paramonov, V.K., Metrikin, A.A. and Fel'd, N.A.

TITLE: ~~The Measurement of~~ Small Reflection Coefficients in a Wide Frequency Band with the Aid of a T-bridge (Izmereniye malykh koeffitsiyentov otrazheniya v shirokom diapazone chastot s pomoshch'yu T-mosta)

PERIODICAL: Elektrosvyaz', 1958, 12 Nr 5, 28 - 34 (USSR).

ABSTRACT: The equipment is intended for the measurement of small reflection coefficients (less than 1 - 1.5%) in the frequency band 3400 - 3900 Mc/s. The arrangement is shown in Figure 1 and consists essentially of a hybrid-T. The co-linear arms are connected to an adjustable termination and to the element under test backed by a standard termination, respectively. The E-arm is fed from the source; the output from the H-arm may be selected at one position of a 2-way switch before detection. The other position of the switch samples the output from a directional coupler connected to the source. The output from the switch goes to a detector via an attenuator and then to an amplifier and indicator. The detector consists of a cartridge-type crystal mount with a probe extending into the guide. The crystal return path is a thin length of wire whose inductance in conjunction with the probe capacitance tunes to the mean

Card 1/3

SOV/106-58-5-5/13

The Measurement of Small Reflection Coefficients in a Wide Frequency Band with the Aid of a T-bridge

operating frequency. The crystal is a DKI-1 with an effective resistance of 300 Ω. The matching over the band is no worse than 0.5. Figure 2 shows the variation in s.w.r. over the band at the E-, H- and test-arms. The H-arm matching is provided by a tapered rod mounted eccentrically on a rotating arm. The E-arm matching requires both a peg and a diaphragm. Figure 4 shows a drawing of the adjustable termination, the absorbing part of which is made of two thin wedges of laminated insulating material coated with aquadag, mounted in the central plane of the guide parallel to the E-vector. At their "dead" end, the wedges are secured to a movable short-circuit which also supports a thin rod which moves axially between the wedges. The rod protrudes at the sharp ends of the wedges and is T-shaped at the end. Independent adjustment of wedges and rod enable the reflection coefficient of the combination to be varied. Figure 5 shows the standard termination. This is a thin wedge of the same absorbing material used above, supported in the centre of the guide between two tapering blocks of foamed plastic. The method of

Card 2/3

SOV/106-58-5-5/13

The Measurement of Small Reflection Coefficients in a Wide Frequency Band with the Aid of a T-bridge

measurement is conventional; the necessary adjustments are described in detail. Seven sources of error are mentioned and their probable values tabulated. The total estimated error in measurement varies from 0.065% with a reflection coefficient of 0.1% to 0.275% with an r.c. of 1.5%. There are 7 figures, 1 table and 1 Soviet reference.

SUBMITTED: July 15, 1957

Card 3/3

SOV/111-58-11-7/36

AUTHORS: Metrikin, A.A., Chief Designer; Paramonov, V.K., Candidate of Technical Sciences

TITLE: Parabolic Horn Antenna for Radio Communication Relay Lines with "Vesna" Equipment (Ruporno-parabolicheskaya antenna dlya radioreleynykh liniy svyazi na apparature "Vesna")

PERIODICAL: Vestnik svyazi, 1958, 19 Nr 11, pp 4-6 (USSR)

ABSTRACT: The article contains basic construction data and electrical characteristics of a parabolic horn antenna, developed by the Scientific Research Institute of the USSR Ministry of Communications, for radio communication relay lines using the "Vesna" equipment. The antenna has the following dimensions: height 620 cm, width 390 cm, depth 320 cm; area of opening 7.5 sq m; antenna volume 11 cu m; weight 990 kg; weight with rotating device 1,370 kg. The opening of the antenna is covered by plastic sheets (penoplast) in one version (Figure 1a). However, a honeycomb type cover made of glass cloth is more effective. The "penoplast" cover reduces the output only to a negligible extent, while the glass wool cover reduces the output by 0.7 db compared with an uncovered

Card 1/2

SOV/111-58-11-7/36

Parabolic Horn Antenna for Radio Communication Relay Lines with "Vesna" Equipment

antenna. The dehydrator "AD-4" is used to produce an excess of dry air at a low pressure inside of the antenna. Figures 3 and 4 are diagrams of the directivity in the horizontal and vertical planes. Further, the authors present sets of formulas for calculating the various electrical characteristics. There are 2 photos and 5 graphs.

ASSOCIATION: NII Ministerstva svyazi SSSR (Scientific Research Institute of the USSR Ministry of Communications)

Card 2/2

[illegible]

[illegible]

Эффективность и помехоустойчивость некоторых методов двукратной передачи сигналов

[illegible]

Помехоустойчивость приемника по схеме [illegible]

2. СЕКЦИЯ АНТЕННЫХ УСТРОЙСТВ

Руководитель А. Ф. [illegible]

9 июня

(с 10 до 16 часов)

В. Д. Кузнецов

Вопросы проектирования передающих антенн для телевидения в УКВ вещания

А. М. [illegible],
Е. А. Анфилов

Антенно-волноводный тракт для радиорелейных линий, использующих рассеяние радиоволн в тропосфере

В. К. [illegible]

Антенна для линий связи с использованием явления ионосферного рассеяния

Л. Е. [illegible]

[illegible] антенн бегущей волны

9

А. А. Метрусов

Исследование волноводного круглого сечения для радиорелейных линий

9 июня

(с 18 до 22 часов)

В. Н. Андрианов,
Л. Д. Бахрах,
Н. Е. [illegible]

К вопросу о влиянии конической поверхности на диаграмму направленности излучателя, расположенного вблизи поверхности

В. А. [illegible]

О влиянии близкого диэлектрического тела на диаграмму направленности антенны

В. П. [illegible]

Некоторые случаи рассеяния радиоволн многоугольными пластинами

В. В. [illegible]

Дифракция электромагнитных волн на плоскости с круглыми поверхностными неоднородностями

М. Д. [illegible]

Возбуждение поверхностных волн на [illegible] антенной

9

Report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORiE), Moscow, 8-12 June. 1959

9(1) SOV/111-59-10-5/23

AUTHOR: Metrikin, A.A., Chief Designer, Paramonov, V.K., Candidate of Technical Sciences

TITLE: Waveguide Systems for Radio-Relay Lines Using the "Vesna" Apparatus

PERIODICAL: Vestnik svyazi, 1959, Nr 10, pp 8-10 (USSR)

ABSTRACT: This article presents electrical characteristics and construction data for the elements of the waveguide system for radio-relay lines using the "Vesna" apparatus. Opening with a brief discussion of waveguide design and construction, the authors state that the article will consider rectangular waveguides in use on several radio-relay lines under construction. Choice of waveguide dimensions, assuring the absence of higher order waves and a sufficiently low attenuation of energy in the waveguide, is discussed; the operating range in this particular case is 7.7 to 8.8 cm, and future expansion of this range at the upper end is taken into account; thus dimensions of 58 and 25 mm are selected for the walls of the waveguide In dealing with the materials for waveguide construction

Card 1/5

SOV/111-59-10-5/23

Waveguide Systems for Radio-relay Lines Using the "Vesna" Apparatus

the authors state that pure copper is best, but too soft; brass, containing 96% pure copper, has sufficiently high conductivity and, experiments show, sufficient rigidity. Construction of waveguides out of alumin-um, containing a very low percentage (1 - 2%) of impurities is also mentioned. It is noted that industrially produced aluminum waveguides are anodized by the chromic acid method and have good anti-corrosion characteristics, while brass waveguides are produced without a protective covering; protective measures for the latter are very briefly discussed. The author states that this article considers rectangular (58 x 25 mm) waveguids, manufactured from L-96 brass, containing 96% pure copper, and that information on rectangular (58 x 25 mm) waveguids of aluminum, in which the content of admixtures of magnesium and manganese does not exceed 1%, is presented. Flange joints, and their requirements, in the waveguide system of the "Vesna" apparatus, for both internal and external installation, are treated; flanges for internal use are stamped from 5-millimeter brass, and brazed to

Card 2/5

SOV/111-59-10-5/23

Waveguide Systems for Radio-relay Lines Using the "Vesna" Apparatus

the waveguide using POS-40 solder. Requirements for flanges used in external installations, determined by conditions such as temperature deformation and icing, demanding additional load carrying capability, are also discussed; such flanges are cast from brass and brazed to the waveguide with POS-40 solder; a rubber gasket provides the necessary hermetic seal. Such flanges, states the author, can, under test, withstand loads of about 7-8 tons. Both types of flanges are illustrated (Fig 1). Two types of curved waveguide are described- bent and turned (Fig 2); in order to keep the reflection coefficient from the curve in the former to a minimum, the radius of curvature is taken equal to no less than 0.5 m, and the angle of rotation no more than 90°. Twisted waveguides and their construction are briefly dealt with; the angle of twist is kept under 10-15° to minimize reflection of energy in such waveguides. Flexible waveguide inserts, their construction and use, are also treated; the reflection coefficient it is stated, does not exceed 3-4% in flexible waveguide inserts. Two types

Card 3/5

SOV/111-59-10-5/23

Waveguide Systems for Radio-relay Lines Using the "Vesna" Apparatus

of hermeticizing inserts are described: a lower such insert, for separation of the hermeticized antenna-waveguide system from the rest of the apparatus, and an upper such insert (Fig 4) to guarantee stable operation of the antenna-waveguide system when antenna hermetization is disrupted; the latter is equipped with an electric heater and insulated cover to avoid freezing in winter; one heating element consumes 70-100 watts. Measurements of attenuation over the frequency range of 3300-4300 mc in a rectangular brass waveguide (58 x 25 mm) 100 m long were made, and the experimentally obtained values compared to those computed by formula (given); experimental and computed values sufficiently coincided for the most part (Fig 5). Measurement of attenuation in an aluminum waveguide (A-00 alloy) showed that it is 0.5 db greater, on the average, than the attenuation in a similar brass waveguide. Matching of long waveguides was studied experimentally on an experimental waveguide 70 m long as well as on standard waveguide systems of various lengths, produced for one of the radio-relay lines; all matching mea-

Card 4/5

surements were made with a waveguide measuring line, and the end of the waveguide being studied coupled to a well matched load. Repeated measurements showed that in sections of waveguide systems 70-100 m long with a well matched load, the travelling wave coefficient over the operating frequency range has a value on the order of 0.95-0.98. The results of one such measurement are illustrated (Fig 6). A waveguide T-bridge, specially constructed for measurement of small reflection coefficients over a wide frequency range, was used to measure the degree of matching between separate elements of the waveguide system; studied were: reflection coefficients from one waveguide joint, of waveguide curves (bent and turned) of twisted waveguides and hermetically sealed inserts. Measurements showed that in the operating frequency range the reflection coefficient from one joint does not exceed 0.2-0.3%; Measurement of the iterative attenuation between waveguides showed it to be no lower than 120 db in the operating frequency range. In conclusion the authors note that on the basis of the data presented, these systems satisfy all the necessary requirements.

PARAMONOV, V.K.

82178

S/106/60/000/07/02/005

9,1200

AUTHORS: Kuznetsov, V.D., Paramonov, V.K.

TITLE: A Highly Effective VHF Antenna With a Low Fringe Radiation Level and a Controllable Radiation Pattern

PERIODICAL: Elektrosvyaz', 1960, 14 No. 7, pp. 18 - 28

TEXT: The authors describe methods and results of calculations and the experimental investigation of a wideband reflector antenna, designed for use on VHF communication lines with atmospheric scattering. The antenna (Fig. 1) is part of a horizontal parabolic cylinder. The exciter consists of a system of Nadenko dipole vibrators and one reflector. The vibrators are suspended on the metallized surface of the earth in such a way that the reflector, together with the earth's surface forms the 90° V-reflector of the exciter. The latter is arranged in such a way that its line of phase centers coincides with the focal line of the parabolic cylinder. The antenna produces a directivity pattern in the vertical plane with small side lobes. The location of the exciter in the immediate vicinity of the earth's surface simplifies the antenna feed system and reduces the influence of the exciter on the antenna directivity pattern. Using a linear exciter in the form of a horizontal vibrator row pro-

Card 1/3

82178 S/106/60/000/07/02/005

A Highly Effective VHF Antenna With a Low Fringe Radiation Level and a Controllable Radiation Pattern

vides a control of the antenna directivity pattern in the horizontal plane by phasing the vibrator currents. This also permits the multiple use of one antenna for reception. The necessity of using curved supports is one of the disadvantages of the antenna. Preliminary calculations show that this does not cause extraordinary difficulties in the antenna design, since only two or three supports are required. The basic antenna dimensions are selected according to the required antenna gain, the width of the directivity patterns in horizontal and vertical planes and the angle of main lobe inclination in the vertical plane. For communication lines operating in the 5 - 10 m range over distances of 1,000 - 1,500 km, the following antenna dimensions are recommended: height of the aperture, H = 40 m; focal distance, f = 20 m; width of the aperture, a ≈ 45 - 50 m (eight vibrators in the exciter); height of the exciter reflector, h_r = 4 m. In practice, the basic antenna reflector and the exciter reflector are a single-line wire lattice. The distance between the wires is determined by the required re-radiation attenuation magnitude. To obtain an essential reduction of the side lobe level of the directivity pattern in the horizontal plane, the vibrators of the exciter must be fed with an amplitude drop from the

Card 2/3

82178

S/106/60/000/07/02/005

A Highly Effective VHF Antenna With a Low Fringe Radiation Level and a Controllable Radiation Pattern

center to the borders of the exciter. Vibrators having an equal distance from the exciter center are connected in parallel (Fig. 2) to provide a control of the directivity pattern. The mathematical analysis of this antenna is given. Equations are given for the directivity patterns in the vertical and horizontal planes, the directive gain and the antenna gain. The experimental investigations were performed on a centimeter model (1 : 200), on a decimeter model (1 : 17) and on a model of the exciter in actual dimensions. All measurements confirmed the correctness of the basic theoretical assumptions and calculations. The experimental results are shown in graphs (Fig. 8 - 11). There are 11 diagrams and 1 Soviet reference.

SUBMITTED: January 25, 1960

Card 3/3

KUZNETSOV, V.D.; PARAMONOV, ~~V.K.~~

Control system for the directivity pattern of a complex wide-band antenna with a low level of minor lobes. Elektrosviaz' 15 no.2:23-30 F '60. (MIRA 14:3)

(Antennas(Electronics))

24074

S/106/61/000/002/003/006
A055/A133

9.1911

AUTHORS: Kuznetsov, V. D. and Paramonov, V. K.

TITLE: Device for controlling the radiation pattern of a multiple wide-band antenna with a low side-lobe level

PERIODICAL: Elektrosvyaz', no. 2, 1961, 23 - 30

TEXT: One of the main components of a steerable antenna - or rather of its feeding system - is the phasing device. The practical setup of this device depends on the particular features of the feeding system. The authors describe in the present article a phasing device designed for an eight-unit receiving antenna, whose feeding system uses unbalanced coaxial cables with wave impedance W ≈ 75 ohms. This device is intended for operation on wavelengths $\lambda = 5 - 10$ m. It allows to control the antenna radiation pattern within the angle-limits $\varphi_0 \pm 24°$ (the distance between the centers of the outermost antenna-units being 38.5 m). This phasing device (see Fig. 3) consists of four unbalanced artificial lines 1 with 75-ohm wave impedance. These lines are formed by identical π-shaped elementary cells C, the radius-ratio of the four concentric semi-circumferences being 1, 3, 5 and 7 respectively. Every cell is connected to a knob-shaped contact

Card 1/4

24074
S/106/61/000/002/003/006
A055/A133

Device for controlling the radiation pattern ...

K, the brushes of the slider Sl sliding on these contacts. The slider is also an unbalanced line. To ensure matching in the points of the moving contacts, the wave impedance of this line varies by steps (from brush to brush), its value being respectively 37.5, 18.75, 12.5 and 9.4 ohms. The matching of the receivers is ensured by a special transformer Tr. Attenuators A are inserted, for simplex operation, between the ends of the artificial lines and the output plugs p. (Some theoretical and practical data are given by the author with respect to the parameters of the elementary cells, of the artificial lines and of transformer Tr). Besides the problem of matching the antenna-units to the 75-ohm wave impedance cable, there arises the problem of balancing, an unbalanced coaxial cable being connected to the symmetrical antenna-system. The solution of these problems involves difficulties in the case of ultrashort waves. A device permitting to overcome these difficulties is described in the second part of the present article. This matching and balancing device (see Fig. 8) is based upon the use of the short-wave transformer described by G. Z. Aisenberg [Ref. 1: Antenny dlya magistral'nykh radiosvyazey ("Antennae for national radio-communications"), Svyaz'izdat., 1948]. Figure 8a shows the connecting diagram of this device, the following method being used for a symmetrical introduction of the emf into the diagram: the inductance L_2 of the correction circuit is divided into two equal parts L_2', each of these two parts having the form of a separate coil made with a thin 75-ohm co-

Card 2/4

axial cable. The coils are connected to the diagram by the ends of the braiding, as shown in Fig. 8c, whereas Fig. 8b shows the way used to couple the two coils, the emf being introduced through the inner conductor of the cable. This device proves entirely satisfactory from the point of view of both matching and balancing, within a wide band of short and ultrashort waves. The author then describes the equipment used for testing the phasing device. Radiation patterns in the horizontal plane were plotted for various settings of the slider. The tests proved that this phasing device allows to control the radiation pattern within a sufficient range of angles. Three radiation patterns are reproduced in the article, for the central setting of the slider and for the 24°-setting (extreme setting). A slight increase in the level of the side-lobes is explained by certain inaccuracies in the length of the artificial lines of the phasing device and of the connecting cables. In the case of transmission antennae, the control of radiation patterns is more complicated. One of the possible controlling devices is briefly described, its deficiencies pointed out, and a method permitting to eliminate these deficiencies is suggested. There are 15 figures and 4 Soviet-bloc references. [Abstracter's note: In Figure 3 l (line) stands for the Russian Л (liniya), C (cell) for the Russian Я (yacheyka) and Tr (transformer) for the Russian Тр (transformator); but K (standing for knob) and Sl (standing for slider) are not translations of the Russian symbols, but an adaption of them, the Russian В standing indeed for "vykhod" (leadout) and ПТ for "polzun-tokos"emnik" (brush slider)].

SUBMITTED: February 25, 1960.

Figure 3:

1) - l
2) - C
3) - K
4) - Sl
5) - Tr

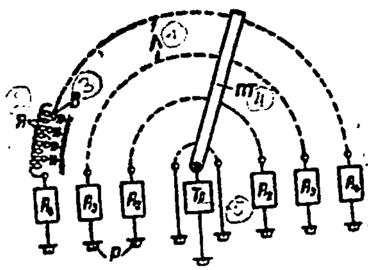


Figure 8:

1) - b
2) - c

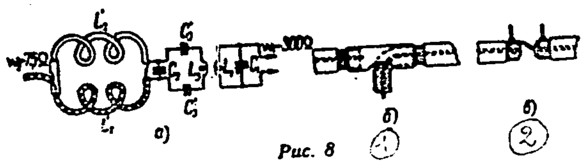


Рис. 8

29552
S/106/61/000/011/004/006
A055/A127

6,4500 (1159)

AUTHORS: Kuznetsov, V. D. and Paramonov, V.K.

TITLE: Broadband stub in superhigh-frequency systems.

PERIODICAL: Elektrosvyaz', no. 11, 1961, 30 - 34

TEXT: In antenna feeding systems, it is often necessary to ground a d-c or a l-f circuit without deteriorating the h-f circuit parameters. The use of an ordinary quarter-wave stub is possible only in systems operating on one single frequency. In superhigh-frequency work, "metallic insulators" are used. The present article is a short analysis of this broadband insulator or stub in the general case, i.e. not considering the relations between the wave impedances Z_0 (of the line) and Z_T and Z_K. The stub being symmetrical, only one half of it (Figure 2) will be examined here. The input admittance of the transforming part of the stub (from the side of point A) at frequency f corresponding to the wavelength λ is given by:

$$Y_{inp\ T} = \frac{Z_T + iZ_0\beta}{Z_T Z_0 + iZ_T^2\beta} \qquad (1)$$

Card 1/5

29552
S/106/61/000/011/004/006
A055/A127

Broadband stub in superhigh-frequency systems

or

$$Y_{inp\ T} = g_{inp\ T} + ib_{inp\ T} = \frac{Z_0 Z_T^2 (1+\beta^2)}{Z_0^2 Z_T^2 + Z_T^4 \beta^2} + i\,\frac{\beta Z_T (Z_0^2 - Z_T^2)}{Z_0^2 Z_T^2 + Z_T^4 \beta^2} \qquad (2)$$

where $\beta = \mathrm{tg}\,\alpha l$; $\alpha = \frac{2\pi}{\lambda}$. Analogously, the input admittance of the correcting short-circuited part of the stub in the same point A is:

$$Y_{inp\ K} = ib_{inp\ K} = -\frac{i}{2 Z_K \beta} \qquad (3)$$

The absolute value of the total reactive admittance of the stub in point A is thus

$$b_\Sigma = b_{inp\ T} + b_{inp\ K} = \frac{\beta Z_T (Z_0^2 - Z_T^2)}{Z_0^2 Z_T^2 + Z_T^4 \beta^2} - \frac{1}{2 Z_K \beta}. \qquad (4)$$

The normalized value of this admittance can be written as follows: X

Card 2/5

Broadband stub in superhigh-frequency systems

$$b'_{\Sigma} = \frac{b_{\Sigma}}{g_{\Sigma}} = \frac{\beta^2 m - n}{2\beta(1+\beta^2)} \qquad (5)$$

where

$$m = 2\left(\frac{Z_0}{Z_T} - \frac{Z_T}{Z_0}\right) - \left(\frac{Z_T}{Z_0}\right)^2 \frac{Z_0}{Z_K}; \qquad n = \frac{Z_0}{Z_K} \qquad (6)$$

The matching (traveling wave coefficient) at frequency f is:

$$K = \frac{\sqrt{\left(b'_{\Sigma}\right)^2 + 4} - \left|b'_{\Sigma}\right|}{\sqrt{\left(b'_{\Sigma}\right)^2 + 4} + \left|b'_{\Sigma}\right|} \qquad (7)$$

Let the working frequency range of the stub be the frequency range within which b'_{Σ} does not exceed the magnitude ξ corresponding to the inflections of function $b'_{\Sigma}(\beta)$ in points $\beta_{1,2}$ (Figure 3). The coordinates of the inflection points are:

$$\beta_{1,2} = \pm\sqrt{\frac{(2m + 6n) + \sqrt{(2m + 6n)^2 + 16mn}}{4m}} \qquad (8)$$

X

29552
S/106/61/000/011/004/006
A055/A127

Broadband stub in superhigh-frequency systems

The coordinates of the two other points where the function is equal to ξ are:

$$\beta_{3,4} = \frac{1 - \beta_{1,2}^2}{2\beta_{1,2}} \tag{10}$$

The working frequency range of the stub is:

$$q = \lambda_{max}/\lambda_{min} = \frac{\operatorname{arctg}\beta_4}{\operatorname{arctg}\beta_3} = \frac{180^\circ - \operatorname{arctg}\beta_3}{\operatorname{arctg}\beta_3} \tag{11}$$

The calculation of the stub is effected as follows: m and n are determined by Eq. (6). Substitution of the thus found magnitudes in Eq. (8) gives $\beta_{1,2}$. Formula (10) is then used to calculate $\beta_{3,4}$. Substitution of $\beta_{3,4}$ in Eq. (5) gives β_Σ'. Formula (7) permits then to find the minimum matching in the working frequency range; the width of this range is determined by means of (11). A graph permitting to calculate K and q is given. The length l must be chosen equal to $\lambda_{mean}/4$, λ_{mean} being determined by the arithmetical mean frequency of the working range. The phase characteristic of the stub can be computed with the aid of formula: X

Card 4/5

Broadband stub in superhigh-frequency systems

$$\operatorname{tg}\varphi = \sqrt{\frac{2\frac{Z_K}{Z_T}\beta^2 - 1}{2\frac{Z_K}{Z_T} + 1}} \tag{12}$$

An experimental check proved that the results obtained with the above set of formulae are sufficiently correct. There are 9 figures and 1 Soviet-bloc reference.

SUBMITTED: January 20, 1961.

Figure 2:

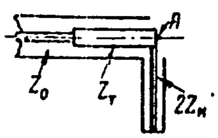
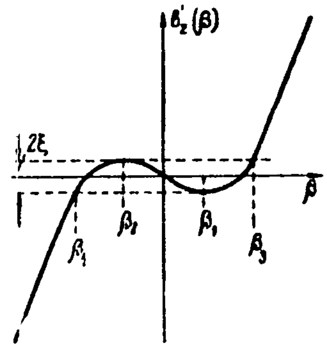


Figure 3:



vX

25520

S/108/61/016/008/002/006
D280/D304

9.1911

AUTHORS: Kuznetsov, V.D., and Paramonov, V.K., Members of Society (See Association)

TITLE: Installation for studying directional properties of antennae

PERIODICAL: Radiotekhnika, v. 16, no. 8, 1961, 25-32

TEXT: The authors describe a simple arrangement for studying directional properties of antennae. The results are displayed on a C.R.T. in a polar system of coordinates. The display shows either the directional distribution of the field strength or power and permits evaluation of the directive gain of the antennae by means of integration of the polar graphs. The installation has been developed for the study of directional properties of broadcast, TV and communication antennae, whose directional properties have to be taken within a narrow frequency band and are usually given in a linear scale. The bloc diagram of the arrangement is shown in Fig. 1. In taking polar diagrams it works as follows: A h.f. sine or pulse amplitude modulated signal, received by a revolving antenna A is applied through a h.f. filter F to a detector

Card 1/5

25520

S/108/61/016/008/002/006
D280/D304

Installation for...

D_1. The l.f. detected signal (1000c/s) is applied to the amplifier K, whose load consists of the moving coil of the phase splitter PS synchronized with the motor. The two signals from the fixed coils of PS are detected by a second detector D_2 and through a phase switch are applied to the inputs of the DC channels of the horizontal and vertical deflection systems of CRO type 30-7, (EO-7) with a long persistance screen. The diagram of the phasing switch and of the second detector is also given. The amplifier used has the output voltage proportional, within a certain range, to the square root of the input voltage which for small amplitudes of the signal gives a directional diagram of the field intensity produced by the aerial. Its cct diagram is shown. The anode cct of the last tube has a transformer matching the amplifier output to the inductance of the moving coil of the phase splitter. The primary of this transformer is tuned to 1000c/s. The required amplitude characteristic is obtained as follows: the second tube of the amplifier has its operating point adjusted very near the cut-off. The voltage

Card 2/5

obtained by the rectification of the output is supplied to the grid through a high resistance, (switch S_{w1} open). With the increasing grid current the grid-cathode resistance decreases in proportion to the output voltage of the amplifier. Hence the amplification of the first stage, whose load consists of the grid-cathode resistance, varies inversely proportionally to the output voltage U_{out}, so that $U_{out} = C\sqrt{u_{in}}$ (1) where C - constant. For better smoothing and stability the output signal is rectified in a bridge circuit and applied to the grid of the second tube through an RC filter. The feed back loop has a small time constant and a pass band of several tens of c/s. In this manner, with the speed of antenna revolution corresponding to 15-20 rpm, the beam width of 5-7° of the directional pattern lobes is faithfully reproduced. The frequency response of the amplifier is given in Fig. 5. the 3db points corresponding to approx. 600c/s. For 55db change in input voltage and 27.5 db change in output voltage the amplifier characteristic coincides with the theoretical response. The gain of the amplifier is 90 db. at 1000c/s for maximum input voltage. The noise level at the output is 35 db below the maximum output signal. The dynamic range of observations is thus of the order of 30 db. If the study of the side lobes is required with the corresponding radiation below 30 db with respect to that of the main lobe, the generator power should be increased accordingly. Amplifier type 28-ИМ (IM) was used. The phase splitter was a goniometer, consisting of two perpendicular to each other coils, built as two rectangular frames, with a third coil of the same shape inside the two. A more judicious choice of the phase splitter would be a two-phase variable transformer of type 4ВТМ5П (4VTM5P) which has a longer gain and a better sinusoidal distribution of voltage in the stator. The above installation permits also the determination of the directive gain of antennae by simple integration of the directional diagrams. The integrating cct consists of the integrating network proper (C=2000 μF and resistors 950,65 and 3.9 kOhm), a 30 μA ammeter and switches SW_2 and SW_3. The procedure of measuring directive gain is given and it is stated that the same reasoning and procedure can be applied to rectangular aperture antennae.

25520 S/108/61/016/008/002/006
D280/D304

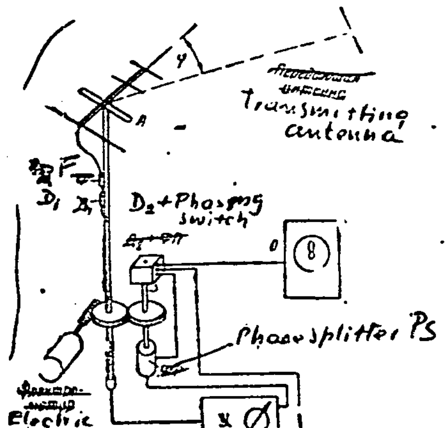
Installation for...

In conclusion, the authors state that the described installation is easy, quick and accurate in actual separation. There are 8 figures and 2 Soviet-bloc references.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communications im. A.S. Popov) Abstractor's note: Name of association taken from first page of journal.

SUBMITTED: March 28, 1961

Card 5/5



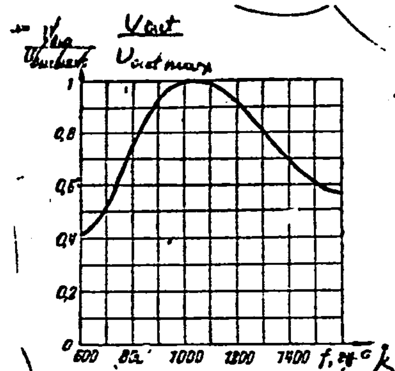


Fig. Рис. 5

ACCESSION NR: AP4037396 S/0106/64/000/005/0009/0013

AUTHOR: Kuznetsov, V. D.; Paramonov, V. K.

TITLE: Selection of antenna height for ionospheric-scatter lines

SOURCE: Elektrosvyaz', no. 5, 1964, 9-13

TOPIC TAGS: radio communication, ionospheric scatter, ionospheric scatter propagation, ionospheric scatter antenna, ionospheric scatter communication

ABSTRACT: Reasons for selecting the antenna mean height H and antenna-aperture height H_A for ionospheric-scatter radio-communication lines are considered. Curves and formulas are given for computing the mean antenna height for any ratio H_A/H. It is found that: (1) With a specified λ/Δ_{max} (where Δ_{max} is the angle of max vertical-plane radiation) in an antenna with the cosine law of aperture vertical excitation, the mean antenna height decreases and the mast utilization factor grows with H_A/H up to $H_A/H = 1$; hence, the antenna gain

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001239210012-0"

ACCESSION NR: AP4037396

grows more quickly than the total antenna height; in an antenna with a uniform law of aperture excitation, the gain increases only up to $H_A/H = 0.85$ and the mast utilization factor only up to $H_A/H = 0.80$; (2) Using antennas with $H_A/H = 0.25-0.35$, as is often the case on 1.800-2.000-km lines, results in a poor utilization of the mast height; increasing H_A/H to 0.7-0.8 would add 3-4 db to the antenna gain at a cost of adding only 20-30% to the mast height. Orig. art. has: 6 figures and 10 formulas.

ASSOCIATION: none

SUBMITTED: 30Dec63	DATE ACQ: 09Jun64	ENCL: 00
SUB CODE: EC	NO REF SOV: 000	OTHER: 000

Card 2/2

ACCESSION NR: AP4014672 S/0108/64/019/001/0018/0030

AUTHOR: Kuznetsov, V. D. (Active member); Paramonov, V. K. (Active member)

TITLE: Stepped directional couplers

SOURCE: Radiotekhnika, v. 19, no. 1, 1964, 18-30

TOPIC TAGS: directional coupler, multistep directional coupler, directional coupler theory, 2 step directional coupler, 3 step directional coupler, power dividing directional coupler

ABSTRACT: A theoretical analysis and the design techniques of multistep directional couplers are presented. The coupler is regarded as a stepped line in which the coefficient of reflection from the input end determines the coupling factor. Formulas for calculating a directional coupler with any relation between the impedances of the principal and the branched circuits are given. An n-step

Card 1/2

ACCESSION NR: AP4014672

directional coupler having an optimum characteristic is analyzed by means of a 2n-power Tchebycheff's polynomial; the extreme case of this characteristic, the so-called maximum-flat characteristic, is also considered. Two- and three-step couplers with the above characteristics are used to illustrate the method of calculation and procedures involved. It is recommended that directional couplers be used in cases requiring power division in a specified ratio (e.g., a multi-element antenna with a controlled radiation pattern). Orig. art. has: 7 figures and 67 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific and Technical Society of Radio Engineering and Electrocommunication)

SUBMITTED: 25Jan63 DATE ACQ: 07Feb64 ENCL: 00

SUB CODE: CO, GE NO REF SOV: 003 OTHER: 003

Card 2/2

KUZNETSOV, V.D.; [illegible], V.K.

Band balancing adapters. Radiotekhnika 19 no.9:20-23 S '64. (MIRA 17:10)

1. Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi im. A.S. Popova.

L 42112-66 EWT(1)/T WR

ACC NR: AP6019010 SOURCE CODE: UR/0106/66/000/006/0020/0027

AUTHOR: Kuznetsov, V. D.; Paramonov, V. K.

ORG: none

56
B

TITLE: Cophased antenna with an active broadband reflector

SOURCE: AN SSSR. Vestnik, no. 6, 1966, 20-27

TOPIC TAGS: antenna array, dipole antenna, antenna radiation pattern, broadband communication

ABSTRACT: A unidirectional cophased dipole antenna array with an active reflector fed by a directional coupler is analyzed. It is shown that, with certain chosen parameters (coupling coefficient, dipole and feeder characteristic impedances), this antenna maintains high directivity with good matching and efficiency characteristics in a wide frequency band without re-adjustments.

Cophased dipole antenna arrays are usually constructed in two sections, an active section fed by the transmitter and a passive reflector section in which the amplitude and phase of the currents are stub tuned to adjust the reactive part of the antenna impedance. Antenna current components from the active and passive sections add in the forward direction and cancel each other in the opposite direction, giving rise to antenna directivity. In other types of systems the reflector may also be active, but special transformers must be used to insure proper amplitude and phase relationships between

Card 1/6 UDC: 621.3.018.8+621.3.018.12

L 42112-66

ACC NR: AP6019010

the currents. In both types the antennas are directional at the operating frequency only. At frequencies slightly removed from the optimum, the front-to-back directivity ratio deteriorates, the antennas are no longer properly matched to the feed system, and the efficiency decreases accordingly.

The authors report on a new driven cophased dipole antenna system comprising two arrays, each containing two sections of four horizontal two-section dipoles placed one above another. Each dipole section consists of four conductors which form the corners of a parallelepiped. Individual antenna down-leads are used for each dipole array, and the current phases are therefore equal. The opposite ends of these down-leads are connected to a directional coupler which channels the currents with proper amplitudes to corresponding dipoles.

This antenna system may be analyzed by assuming that each array may be replaced by an equivalent dipole with a corresponding radiation impedance equal to the sum of all actual dipole impedances, including the effect of mutual interaction between the main dipoles and the directors. For purposes of analysis, the reflector dipoles may also be analogously treated as one dipole. The calculations performed by the authors apply

Card 2/6

L 42112-66

ACC NR: AP6019010

to an antenna system with the following parameters: distance (t) between the center lines of adjoining four-dipole columns, 430 mm; diameter of each conductor used to form a dipole arm, 0.00093 t; diagonal of the transverse cross section of the parallelepiped formed by the conductors, 0.0745 t; length of each dipole arm, 0.42 t; vertical distance between dipoles, 0.581 t; distance between the two arrays, 0.337 t; characteristic impedance of each dipole feeder, 300 ohm; directional coupler length, 0.3 t; maximum directional coupler current splitting factor, 0.2.

The authors develop expressions for the resistive and reactive components of self- and mutual impedances of the equivalent dipoles as functions of l/λ (where l is the dipole arm length and λ the wavelength). From these expressions and the directional coupler parameters, the basic antenna performance factors such as the antenna radiation patterns, the input traveling wave ratio, the antenna efficiency, and the back-to-front ratio are determined. The deviations are based on a previous work on a driven cophased two-dipole antenna fed through a directional coupler. The theoretical and experimental curves for the traveling wave ratio (TWR), efficiency (η), and back-to-front ratio (B/F) are shown in Figs. 1, 2, and 3, respectively. The experimental results were obtained for the

L 42112-66

ACC NR: AP6019010

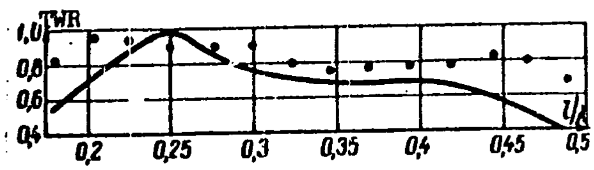


Fig. 1. Traveling wave ratio as a function of l/λ

Solid line - theoretical; dots - experimental.

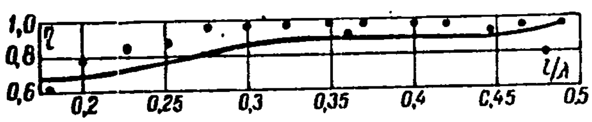


Fig. 2. Efficiency as a function of l/λ

Solid line - theoretical; dots - experimental.

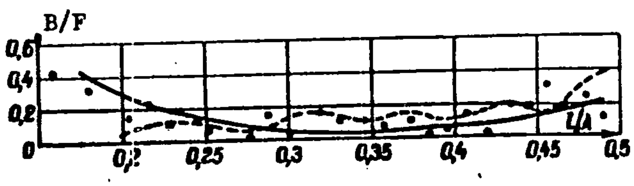


Fig. 3. Back-to-front directivity ratio as a function of l/λ

Solid line - theoretical; dots - experimental; broken line - antenna with nonperiodic reflector.

Card 4/6

antenna whose dimensions were given above. Each array in the experimental setup was fed by a coaxial cable, and the dipoles were driven through a symmetric 300-ohm KATV cable. The frequency range used in the test was limited to the band between 300 and 900 Mc. Both the general pattern shape and the half-power beam widths of the radiation patterns [not supplied] are said to conform to the theoretical patterns. It is apparent from the theoretical curves that the antenna is highly unidirectional (the B/F ratio does not exceed 0.1, 0.2, or 0.3 in the 1.6:1, 2.1:1, or 2.5:1 frequency ranges, respectively). A good match between the antenna proper and the feed system is evident from the high TWR (0.7 for most of the range). The efficiency is 90% at short wavelengths and 70% at longer wavelengths.

One of the salient features of the antenna system is its ability to maintain its performance level even when the parameters of its components are sub-optimal. For example, the length of the directional coupler does not affect the basic antenna characteristics. The dipole array dimensions are not critical and may be made equal to the corresponding dimensions of typical cophased dipole arrays, i.e., distance between arrays, $\lambda_0/4$; vertical distance between individual dipoles, $\lambda_0/2$; and dipole arm length, $0.42\lambda_0$ (where λ_0 is the fundamental antenna wavelength). The only

L 42112-66

ACC NR: AP6019010

relatively critical parameter is the dipole impedance, which tends to extend the antenna frequency range and assures a good match between components if it is low.

For comparison, the broken line in Fig. 3 represents the B/F directivity ratio of a cophased antenna with nonperiodic reflector, i.e., a reflector in the form of a curtain of parallel conductors separated by a distance of 0.035 t. From this and other comparisons, it was concluded that the performance of the new antenna is equal to or better than that of an array with nonperiodic reflector or a cophased dipole antenna array in which the reflector is tuned at each frequency. Orig. art. has: 11 formulas and 12 figures. [FSB: v. 2, no. 8]

SUB CODE: 09, 17 / SUBM DATE: 09Oct65 / ORIG REF: 002

Card 6/6 af

L 39678-66 EWT(1)/T WR/GD-2

ACC NR: AP6009497 SOURCE CODE: UR/0106/66/000/003/0026/0032

AUTHOR: Kuznetsov, V. D.; Paramonov, V. K.

9

B

ORG: none

TITLE: Radiator with a reflector supplied through a directional coupler

SOURCE: Elektrosvyaz', no. 3, 1966, 26-32

TOPIC TAGS: antenna, radio antenna, broadband antenna, UHF antenna

ABSTRACT: The radiator-reflector antenna 25B element ensures good directional pattern but has a narrow-band characteristic. To widen its band, insertion of a suitable directional coupler between the radiator and reflector is suggested. Formulas are developed which determine the conditions (coupling factor, characteristic impedances of the rods and feeders, etc.) under which such an element possesses good directivity, good matching, and high efficiency.

Card 1/2 UDC: 621.396.677.81

L 39678-66
ACC NR: AP6009497

Experimental verification of the new formulas included measuring the TW factor, efficiency, and front-to-back ratio of a 4-prong antenna system within a 300—800-Mc band. The experimental data was slightly better than estimated; hence, the new formulas are recommended for rough estimation of such antenna systems. Orig. art. has: 6 figures and 33 formulas.

SUB CODE: 09 / SUBM DATE: 09Oct65 / ORIG REF: 001

Card 2/2 BLD

L 38991-66 EWT(1)/T WR

ACC NR: AP6023600 SOURCE CODE: UR/0106/66/000/007/0017/0024

47
B

AUTHOR: Kuznetsov, V. D.; Paramonov, V. K.

ORG: none

25B

TITLE: Remodeling of tuned cophasal arrays into broadband antennas

SOURCE: Elektrosvyaz', no. 7, 1966, 17-24

TOPIC TAGS: phased array antenna, broadband antenna, antenna engineering

ABSTRACT: A tuned-reflector cophasal array can be re-connected into an active-reflector broadband antenna; the reflector is fed via a directional coupler. The method of connection of four tiers of radiating elements of a stacked antenna is shown (see Fig. 1) for (a) multiple-feed array and (b) paired-feed array. A model of "b"-type antenna was tested at 560—680 Mc; plots of its traveling-wave ratio, efficiency, and back-to-front ratio vs. frequency are shown. A scheme for remodeling a tuned cophasal array with a controllable directional pattern is given. Four transmitting

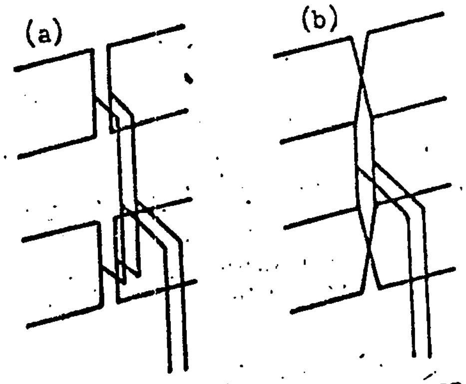


Fig. 1. Multiple-feed array and paired-feed array

UDC: 621.396.67.012.12

Card 1/2

L 61009-65 EWT(l)/EEC-4/T/ECS(k) Pac-4/Pi-4/Pj-4/Pl-4 WE
ACCESSION NR: AP5018024 UR/0106/65/000/007/0017/0024 32
621.396.671.029.63 B

AUTHOR: Kuznetsov, V. D.; Paramonov, V. K.

TITLE: System for the multipurpose utilization of a uhf receiving antenna 25B

SOURCE: Elektrosvyaz' 19, no. 7, 1965, 17-24

TOPIC TAGS: uhf antenna, radiation pattern, amplifier, directional coupler, phasing unit

ABSTRACT: A system for the multipurpose utilization of two six-section antennas operating in the meter band is described. With this equipment, it is possible to obtain simultaneously up to five independent radiation patterns for each antenna. Each pattern can be directed continuously ±20° in the horizontal plane. The apparatus includes 12 hf amplifiers, a control and measuring unit, and a phasing

at either 40—44 Mc or 65—73 Mc. The output is undistorted for input signals of up

Card 1/3

L 61009-65

ACCESSION NR: AP5018024

to 30—40 mv. 3) A wideband amplifier with a bandwidth of approximately 30 Mc operating in the frequency range of 30—60 Mc. Linearity is maintained at input voltages of ≤ 40 mv. Set noise for all three types is in the range of 3—4 KT. The phasing system consists of two five-section units serving the two antennas and one control unit, which is used to test the accuracy of the radiation pattern formation. Each phasing unit in turn consists of three identical artificial helical lines of increased electrical length. A sliding pickup arm is provided for each ... combination of three helical lines, which controls the radiation-pattern formation.

ASSOCIATION: none

Card 2/3

L 61009-65

ACCESSION NR: AP5018024

SUBMITTED: 27Oct64

ENCL: 00

SUB CODE: EC

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4062

Card 3/3

L 21409-66 EWT(1)/T WR

ACC NR: AP6009840 SOURCE CODE: UR/0413/66/000/004/0033/0033

INVENTOR: Kuznetsov, V. D.; Paramonov, V. N. 34

ORG: none

TITLE: Cophased array with active reflector. Class 21, No. 178866

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 4, 1966, 33

TOPIC TAGS: antenna array, antenna configuration, dipole antenna

ABSTRACT: The Author Certificate introduces a cophased antenna 25B array with an active reflector (see Fig. 1) which consists of two identical dipole arrays spaced λ/4 apart.

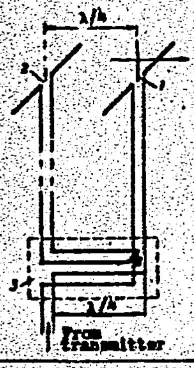


Fig. 1. Cophased array

1 - Radiating dipole; 2 - reflecting dipole;
3 - directional coupler.

Card 1/2 UDC: 621.396.677.852

L 21409-66

ACC NR: AP6009840

O

To enhance directivity and assure proper matching characteristics over a wide frequency range, the two dipoles are fed from a directional coupler. Orig. art. has: 1 figure. [BD]

SUB CODE: 09/ SUBM DATE: 23Dec63/ ATD PRESS: 4221

Card 2/2 VLR

PARAMONOV,V.P., arkhitektor; KARTASHEV,K.I., inzhener; EYSMAN,G.Ya., inzhener

Plans for apartment houses designed by GIPROTIS. Rats. i izobr. predl. v stroi. no.102:10-14 '55. (MIRA 8:10)
(Buildings, Prefabricated)

1. PARAMONOV, V. P. : SOKOLOV. L. A. ENG.

2. USSR (600)

4. Building - Standards

7. Standard plans for small residential buildings designed by State Institute for Planning of Standard Industrial Construction. Biul. stroi. tekh, 9 no. 24. 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

OSTROVSKIY, M.Ye., arkhitektor; PARAMONOV, V.P., arkhitektor; YUSOV, S.A., arkhitektor; NYSMAN, G.Ya., inzh.

Standardization of secondary and auxiliary buildings and structures in all branches of industry. Prom.stroi. 38 no.6:6-13 '60. (MIRA 13:7)

(Factories--Design and construction)

PARAMONOV, V.P., arkhitektor; KLEBANOV, P.N., inzhener.

Planning apartment houses with small apartments. Stroi.prom. 35 no.4:17-20 Ap '57. (MLRA 10:3)

(Apartment houses)

PARAMONOV, V.S.

Increasing the service period of the lining of a cooling drum.
TSement 28 no.2:22 Mr-Ap '62. (MIRA 15:8)

1. Kosogorskiy metallurgicheskiy i tsementnyy zavod.
(Kilns, Rotary--Cooling)

PARAMONOV, V.S.

AOZh machine. Kozh.-obuv.prom. no.7:34-36 Jl '59.
(MIRA 12:11)
(Leather industry--Equipment and supplies)